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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/865,478	05/29/2001	Yui-Whei Chen-Yang	041781-5016	3489

9629 7590 12/16/2003

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EXAMINER	
WILLS, MONIQUE M	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 12/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/865,478	CHEN-YANG ET AL.	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 May 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 14* is/are rejected.

7)☒ Claim(s) *12 and 13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 7-11 & 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Coltrain et al. U.S. Patent 5,01028.

Coltrain teaches a solid composite polymer electrolyte comprising a branched polymer of poly[bis(methoxyethoxyethoxy)phosphazene] or (MEEP) (Preparation 2) having a molecular weight of $1x10^4$ to 1×10^6 (par. 24, claim 4). The MEEP inherently is a general amorphous branched polymer having recurrent units, each of which includes a backbone chain and at least a side chain linked to said backbone chain and containing at least one coordination potential atom; wherein the branched polymer is a –P=N – group, and said coordination potential atom is an alkoxy group (claims 2-3). The solid composite includes Al_2O_3 and TiO_2 (par. 40, claim 7) which are inherently amphoteric Lewis acid-base ceramic fillers that form Lewis acid-base interactions with side chains of the branched polymer and an amphoteric metal salt. The ceramic filler has a particle size of less than 0.2 microns (par. 36, claim 14). Metallic salts are added to the polymer electrolyte including lithium salt (claim 8) such as $LiClO_4$ (par. 34, claim

9). The salt is inherently amphoteric and forms Lewis acid-base interaction with side chains of the branched polymer. The MEEP may be in an amount of 20% to about 95% by weight (par. 39), the ceramic filler is found in an amount of 1 to 80% (par. 40) and the salt is between about 5 to about 20% by weight (par. 41) (claim 10-11). Therefore, the instant claims are anticipated by Coltrain.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1,2,5,6,7,8 are rejected under 35 U.S.C. 102(b) as being anticipated by Kumar U.S. Patent 5,695,873.

Kumar teaches a solid composite polymer electrolyte comprising polyacrilonitrile(PAN) (col. 2, lines 10-20). The PAN inherently is a general amorphous branched polymer having recurrent units, each of which includes a backbone chain and at least a side chain linked to said backbone chain and containing at least one coordination potential atom; wherein the branched polymer is a –C-C – group, and said coordination potential atom is an C≡N group (claims 2 & 5). The PAN inherently has a molecular weight within the range from about 10000 to about 1×10^7 (claim 6). The

solid composite includes Al_2O_3 and (col. 2, lines 10-20, claim 7) which are inherently amphoteric Lewis acid-base ceramic fillers that form Lewis acid-base interactions with side chains of the branched polymer and an amphoteric metal salt. A metallic salt is added to the polymer electrolyte including lithium salt of $LiBF_4$ (par. 34, claim 8). The salt is inherently amphoteric and forms Lewis acid-base interaction with side chains of the branched polymer.

Allowable Subject Matter

Claim12 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 12 would be allowable over the prior art of record, because the prior art is silent to a solid composite polymer comprising 41 to 70% by weight PAN, 27 to 50% of lithium perchlorate and 3 to 9 % of ceramic filler.

Claim 13 would be allowable over the prior art of record, because the prior art is silent to a solid composite polymer comprising 47 to 60% by weight PAN, 35 to 45% of lithium perchlorate and 5 to 8 % of ceramic filler.

The prior art, such as Kumar et al. , teaches a polymer ceramic composite electrolyte wherein 25 to 60% by weight of the electrolyte contains a ceramic filler. Further the lithium salt is present in an amount of 10 to 20%. The reference is silent to

a ceramic filler content of less than 9% necessitated by the instant claims. The crux of Kumar's invention includes a ceramic filler of at least 25% to enhance cationic transport. Therefore, the instant claims are patentably distinct from Kumar.

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (703) 305-0073. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 703-308-4333.

The unofficial fax number is (703) 305-3599. The Official fax number for non-final amendments is 703-872-9310. The Official fax number for after final amendments is 703-872-9311.

Mw

11/29/03

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